20040309.ba v03_n620.bam.20040309

>From ???@??? Tue Mar 9 07:02:09 2004 +0000
Message-Id: <200403091301.i29D1re2011695@sco.theporch.com>
Date: Tue, 9 Mar 2004 07:01:34 CST
From: Old Tube Radios <boatanchors@theporch.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: BOATANCHORS digest 3620

BOATANCHORS Digest 3620

Topics covered in this issue include:

1) Re: August 14, 1945, radio operator Jim Smith was flying .....
   by stuck in 50s <polepeeg@aa4rm.ba-watch.org>
2) Re: August 14, 1945, radio operator Jim Smith was flying .....
   by W7QHO@aol.com
3) Re: Anomalous vacuum tube behavior
   by "Arden Allen" <gumbear@pacbell.net>
4) Re: Low Drive
   by "Arden Allen" <gumbear@pacbell.net>
5) Re: [Boatanchors] Collins 51G-4 ID needed.
   by WA5CAB@cs.com
6) Re: Adventures in ARC-5 restoration
   by Bob Roehrig <broehrig@aurora.edu>
7) Crystal tutorial
   by "A. B. Bonds" <ab@vuse.vanderbilt.edu>
8) Re: Anomalous vacuum tube behavior
   by Edward Knobloch <k4pf@juno.com>
9) Re: Help ...
   by luc dugas <collins2@globetrotter.net>
10) FS/FT: tubes/cavities
   by brian.k.harris@philips.com
11) FS: Johnson Invader 2000 RF deck
   by brian.k.harris@philips.com
12) RE: Interesting web store
   by Morris Odell <morriso@vifm.org>
13) FS: Heath TX-1 Apache
   by brian.k.harris@philips.com
14) Schematic needed - National CRM o'scope 1"
   by John Dilks - K2TQN <oldradio@worldnet.att.net>
15) Re: Schematic needed - National CRM o'scope 1"
   by john <johnmb@nc.rr.com>
16) Re: Anomalous vacuum tube behavior
   by "Barry L. Ornitz" <ornitz@tricon.net>
17) Re: FS: Johnson Invader 2000 RF deck
   by Chuck Swiger <cswiger@widomaker.com>
18) Any Radio related places in Moline, IL?

by Joe Eide <jeide@execpc.com>
19) RE: Crystal tutorial
by Morris Odell <morriso@vifm.org>
20) Re: Low Drive
by "Robert Nickels" <w9ran@oneradio.net>
21) Re: Anomalous vacuum tube behavior
by "Arden Allen" <gumbear@pacbell.net>
22) Re: Anomalous vacuum tube behavior
by "Arden Allen" <gumbear@pacbell.net>
23) Re: Anomalous vacuum tube behavior
by "Arden Allen" <gumbear@pacbell.net>
24) The Dynatron
by "Arden Allen" <gumbear@pacbell.net>
25) Re: Anomalous vacuum tube behavior
by David Stinson <arc5@ix.netcom.com>

Date: Sun, 7 Mar 2004 23:44:39 -0500 (EST)
From: stuck in 50s <polepeeg@aa4rm.ba-watch.org>
Message-Id: <200403080444.i284idM27640@barnjob.ba-watch.org>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: August 14, 1945, radio operator Jim Smith was flying .....

> Don't miss the encore presentation of The Last Mission, Sunday, May 25 @
> 6pm/8c.

It played in Georgia week before last

Time well spent

Date: Mon, 08 Mar 2004 01:34:59 -0500
From: W7QHO@aol.com
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: August 14, 1945, radio operator Jim Smith was flying .....
MIME-Version: 1.0
Message-ID: <70D68079.7D8B46A6.0000F8E2@aol.com>
Content-Type: text/plain; charset=iso-8859-1
Content-Transfer-Encoding: 8bit

In a message dated 3/7/2004 11:44:39 PM Eastern Standard Time, polepeeg@aa4rm.ba-watch.org writes:

> > Don't miss the encore presentation of The Last Mission,
> Sunday, May 25 @
> 6pm/8c.
>
> It played in Georgia week before last

>
> Time well spent

If it's the same one I saw a couple of weeks ago, the crew were all wearing the
wrong kind of headsets. Anyone else catch this?

Dennis D. W7QHO
Glendale, CA

Message-ID: <008e01c404d7$9bebfb30$3de57443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Anomalous vacuum tube behavior
Date: Sun, 7 Mar 2004 22:18:37 -0800
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi Don'

> try bypassing the screens and cathodes with .001 caps. sounds like your
amp
> is ocsillating?

The cathodes are already bypassed with 'lytics and I tried paralleling with
ceramic disks with no effect. Bypassing the screens messes with the phase
in the feedback loop but I tried doing that to see if the problem was vhf
parasitics. No effect with caps on the screens.

Thanks for the suggestion.

Arden Allen
KB6NAX

Message-ID: <008f01c404d7$9c6f5c00$3de57443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Low Drive
Date: Sun, 7 Mar 2004 22:30:10 -0800
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi Bob;

> I'm also wondering if there is an unintrusive way to troubleshoot RF
> circuits with a scope?

Yes, several ways. You can construct either a resistive or capacitive divider that does negligible loading and calibrate it with a signal generator at the frequency of interest. If a tuned circuit has substantial capacitance temporarily realign it with the x10 probe in place to get a reasonably accurate measurement of RF voltage. If measurement accuracy is not required just putting the probe tip in the vicinity of the circuit of interest, i.e., "sniffing" the RF will do. Sometimes you can simply connect a piece of coax to two places on a chassis or shield to get a sample of RF to the scope. A two or three turn loop on the end of a coax will pick up RF nicely.

Arden Allen
KB6NAX

From: WA5CAB@cs.com
Message-ID: <193.26a350f7.2d7d73d0@cs.com>
Date: Mon, 8 Mar 2004 01:59:28 EST
Subject: Re: [Boatanchors] Collins 51G-4 ID needed.
To: Old Tube Radios <boatanchors@theporch.com>
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="part1_193.26a350f7.2d7d73d0_boundary"

--part1_193.26a350f7.2d7d73d0_boundary
Content-Type: text/plain; charset="US-ASCII"
Content-Transfer-Encoding: 7bit

Bob & Groups,

Well, as it turns out, the 51G-4 that I asked about actually is a 51J-4. The guy was so careful with all of the other nomenclature (and I knew about the list below) that I didn't even consider it. However, 51x-n is Collinsese for a receiver.

51H-3	R-105/ARR-15
51J-3	R-388/URR
51N-4	Single channel HF receiver 2-24 MC CW/FSK
51Q	TCS Receiver
51R-2	VHF NAV Receiver
51S-1	"S"-Line Receiver (Duh)
51X-2B	AN/ARC-73

I don't collect Collins and I know that this is nowhere near the complete list, but you can all see why I credited it as actually being a 51G-4.

73
Robert Downs - Houston
<http://www.wa5cab.com> (Web Store)
<wa5cab@cs.com> (Primary email)
<wa5cab@houston.rr.com> (Backup email)

--part1_193.26a350f7.2d7d73d0_boundary
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*         ---REMAINDER OF MESSAGE TRUNCATED---             *
*     This post contains a forbidden message format        *
*  (such as an attached file, a v-card, HTML formatting)  *
*    Mail Lists at theporch.com only accept PLAIN TEXT     *
* If your postings display this message your mail program *
* is not set to send PLAIN TEXT ONLY and needs adjusting  *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

--part1_193.26a350f7.2d7d73d0_boundary--

Date: Mon, 8 Mar 2004 08:10:44 -0600 (CST)
From: Bob Roehrig <broehrig@aurora.edu>
To: Old Tube Radios <boatanchors@theporch.com>
cc: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Adventures in ARC-5 restoration
Message-ID: <Pine.OSF.4.58.0403080808310.327449@mail.aurora.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

On Sun, 7 Mar 2004, Charles wrote:

> A previous owner had mounted an SO-239 (now missing, of course) on the rear panel and ran coax to the front. I checked out the circuit and the idiot had connected the coax center conductor to a point that was at RF ground (bypassed), not the 100 pf cap going to the main tuning condenser and RF stage grid! I'll bet he's still wondering why the sensitivity was so poor.

Even if you connect it correctly it still won't be 50 ohms. I don't recall if there are extra pins on the base of the RF input coil but if there are you might consider opening up the can and winding a couple turn link coil for the input, since the set has been modified already.

Bob Roehrig
Aurora University Telecom/IS dept.
broehrig@aurora.edu   73 de K9EUI
630-844-4898   fax 630-844-4222

Message-Id: <5.1.0.14.0.20040308132024.02829c30@vuse.vanderbilt.edu>
Date: Mon, 08 Mar 2004 13:42:00 -0600
To: Old Tube Radios <boatanchors@theporch.com>
From: "A. B. Bonds" <ab@vuse.vanderbilt.edu>
Subject: Crystal tutorial
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"; format=flowed

No, I am not offering one, I need one. I got a nice HP sweep generator (HP 8601a), but it dies after about ten minutes. I have tracked the problem to the 200 MHz local oscillator (which beats with the VTO). After replacing most of the components, I find that the problem resides with the crystal, which has gotten very temperature sensitive. When it warms up about 10-15 degs, the oscillator shuts down.

I have found a number of crystal vendors that will go up to 200 MHz (on overtones) but they need a spec that differentiates between a "series" crystal and one with a capacitive load. I can't quite suss that out with this puppy.

The circuit looks like this (here is where it gets boring, sorry): An NPN transistor (2N5179) has the base grounded. There are 1k loads on both emitter and collector (collector load then to decoupled B+). The collector also has a 0.001 uF cap going to (1) a tuning coil (to ground) and (2) a 6.8 pf ceramic.
The emitter also has the crystal, shunted by a 0.1 uH choke, going to (1) the other end of the 6.8 pf cap mentioned above, (2) a 27 pF ceramic cap to ground and (3) a 0.001 uF cap, which is the oscillator output to the next stage.

I BELIEVE that the 27 pf constitutes a capacitive load, although it is only on one side of the crystal. The 6.8 pf links the crystal to the collector for the required feedback. So I don't THINK it is series.

??

A. B. Bonds

To: Old Tube Radios <boatanchors@theporch.com>
Cc: boatanchors@theporch.com
Date: Mon, 8 Mar 2004 15:10:36 -0500

Subject: Re: Anomalous vacuum tube behavior
Message-ID: <20040308.151037.564.1.k4pf@juno.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
From: Edward Knobloch <k4pf@juno.com>

Hi, Arden

To get rid of a parasitic in an AB1 amp, try adding a resistor in series with each control grid. A couple of hundred Ohms should do it.
The resistors act as "Q-killers".

73,
Ed Knobloch

"Arden Allen" <gumbear@pacbell.net> writes:

> I have a 50'e era hi-fi amp on the workbench
<snip>
>The problem is that when the output reaches a certain level a small
> perturbation appears on the leading edge near the negative crest of
> a sine
> wave. As power is increased or decreased the perturbation can be
> observed
> to move up and down along the waveform from crest to part way down
> the
> leading edge and then suddenly disappearing as power is decreased.
<snip>

Date: Mon, 08 Mar 2004 17:00:17 -0500
From: luc dugas <collins2@globetrotter.net>
Subject: Re: Help ...
To: Old Tube Radios <boatanchors@theporch.com>
Message-id: <00c501c40558$be17fac0$d760fea9@compaq>
MIME-version: 1.0
Content-type: text/plain; charset=iso-8859-1
Content-transfer-encoding: 7BIT

i have a tuska radio cabinet alone. it is 18 3/8'' long and the base is 18 7/8 long,
 6 7/8''high and 7 3/8 deep. it is a wooden cabinet and it is probably from the 1920's. asking $10usd + shipping.
luc

From: brian.k.harris@philips.com

To: Old Tube Radios <boatanchors@theporch.com>
Subject: FS/FT: tubes/cavities
MIME-Version: 1.0
Message-ID: <OF722ADD36.6D38006A-ON88256E51.0075FAAF-86256E51.00790E0D@diamond.philips.com>
Date: Mon, 8 Mar 2004 15:59:47 -0600
Content-Type: text/plain; charset="us-ascii"

2 each 2C43
1 each 6771

Each tube comes with it own it's own carrying case in the form of silver-plate cavity, 1GHz, 2GHz and 4GHz, respectively. And...there's even a 500 MHz driver assembly with its own cavity if someone's interested. This stuff came out of operational equipment at 4040.9664 MHz.

$19 plus SHIPPING or I'd trade for a new 6B4, or a new D-104 cartridge or ???

Brian K. Harris, WA5UEK

From: brian.k.harris@philips.com
To: Old Tube Radios <boatanchors@theporch.com>
Subject: FS: Johnson Invader 2000 RF deck
MIME-Version: 1.0
Message-ID: <OFF7311B6E.DEAD4C84-ON88256E51.0078D6FD-86256E51.007A12F1@diamond.philips.com>
Date: Mon, 8 Mar 2004 16:10:55 -0600
Content-Type: text/plain; charset="us-ascii"

I'll probably regret this but I have for sale a Johnson Invader 2000 RF Deck (less tubes and knobs). This would make an excellent platform for an 80-10 meter amplifier. Just add a pair of 4-400's (or 4-250's), a power supply and a cabinet and you're there. Pictures are available on request.

$75 plus SHIPPING.

Brian K. Harris, WA5UEK

Date: Tue, 09 Mar 2004 10:08:14 +1100
From: Morris Odell <morriso@vifm.org>
Subject: RE: Interesting web store
To: Old Tube Radios <boatanchors@theporch.com>
Cc: Boatanchors Mailing List <boatanchors@sco.theporch.com>
Message-id:

<07A064EA6042D4118A62009027F70E7733A24F@nt_exchange.vifp.monash.edu.au>
MIME-version: 1.0
Content-type: text/plain; charset=us-ascii
Content-transfer-encoding: 7BIT

Hi gang,
>
> Years ago I built a digital clock using the giant nixie tubes
> that were surplused from the stock market displays. It was
> so noisy that it got into the TV, ham radios, and HiFi.

Those of us interested in this subject might like to take a look at the NEONIXE group on Yahoo. It's devoted to the construction of nixie, CRT and other old technology clocks. There are some very clever and creative people there who are really pushing the envelope of modern design with those lovely old tubes. There are a lot of very interesting files, and pics in the photo galleries.

I've built a few myself and am current working on one with a vacuum tube timebase and electromechanical uniselectors to control the nixies.

73 de Morris VK3DOC

From: brian.k.harris@philips.com
To: Old Tube Radios <boatanchors@theporch.com>
Subject: FS: Heath TX-1 Apache
MIME-Version: 1.0
Message-ID: <OFF230138C.30D2A053-ON88256E51.007ED245-86256E51.007FFC13@diamond.philips.com>
Date: Mon, 8 Mar 2004 17:15:29 -0600
Content-Type: text/plain; charset="us-ascii"

For Sale: Heath TX-1 Apache The dial drum is broken but new replacements are available for about $20-25. It's partially dismantled (around the drum). The electrical condition of this transmitter is unknown. The front panel is good and the cabinet is straight but it could use repainting. I have $50 in this and that's what I want for it. I will not ship this thing but I will bring to the Belton, TX hamfest for a consumated deal. If I don't sell it within 2 weeks I will part it out (and get much more than $50 for the parts).

Brian K. Harris, WA5UEK

Message-Id: <6.0.1.1.0.20040308194551.05c02050@postoffice.worldnet.att.net>
Date: Mon, 08 Mar 2004 19:50:01 -0500
To: Old Tube Radios <boatanchors@theporch.com>

```
From: John Dilks - K2TQN <oldradio@worldnet.att.net>
Subject: Schematic needed - National CRM o'scope 1"
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"; format=flowed


Hi gang,

Schematic needed - 1934? National CRM o'scope 1".  Does anyone have a manual?

I just received this little beauty from the UK - got it at the
eplace.  Shipping was 2X the eplace price, but still worth it.

Thanks for any help.

73, John Dilks, K2TQN

------------------------------
Message-Id: <3.0.3.32.20040308210950.02816808@pop-server.nc.rr.com>
Date: Mon, 08 Mar 2004 21:09:50 -0500
To: Old Tube Radios <boatanchors@theporch.com>
From: john <johnmb@nc.rr.com>
Subject: Re: Schematic needed - National CRM o'scope 1"
Mime-Version: 1.0
Content-Type: multipart/mixed; x-avg-checked=avg-ok-2E537993;
boundary="=======76CB517D======="

--=======76CB517D=======
Content-Type: text/plain; x-avg-checked=avg-ok-2E537993; charset=us-ascii
Content-Transfer-Encoding: 8bit

Hi John,
I'm pretty sure I have one (I know I have the scope!)....will  look
and scan for you...
73
John K5MO


At 07:50 PM 3/8/04 -0500, John Dilks - K2TQN wrote:
>
>
>Hi gang,
>
>Schematic needed - 1934? National CRM o'scope 1".  Does anyone have a manual?
>
>I just received this little beauty from the UK - got it at the
>eplace.  Shipping was 2X the eplace price, but still worth it.
>
```

```
>Thanks for any help.
>
>73, John Dilks, K2TQN
>
>
>
>---
>
>Checked by AVG anti-virus system (http://www.grisoft.com).
>Version: 6.0.580 / Virus Database: 367 - Release Date: 2/6/04
>

--=======76CB517D=======
Content-Type: text/plain; charset=us-ascii; x-avg=cert; x-avg-checked=avg-
ok-2E537993
Content-Disposition: inline


---

Checked by AVG anti-virus system (http://www.grisoft.com).
Version: 6.0.580 / Virus Database: 367 - Release Date: 2/6/04

--=======76CB517D=======--

------------------------------
Message-ID: <005b01c4057b$eaa5b0a0$c64562d8@barry1>
From: "Barry L. Ornitz" <ornitz@tricon.net>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: <spr@earthlink.net>
Subject: Re: Anomalous vacuum tube behavior
Date: Mon, 8 Mar 2004 21:11:58 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit
```

Arden, KB6NAX, related an interesting oscillation in a recent post. Scott Robinson got the right answer when he described the problem as a parasitic oscillation. Often called blivets or snivets, they are fairly common in beam power output tubes, and are more properly called Barkhausen oscillation. The following quote is from http://antiqueradio.org/hallit-67.htm.

> "I queried the rec.antiques.radio+phono newsgroup, and soon learned from TV veterans

> that this is "Barkhausen interference," caused by unwanted oscillation from the horizontal output tube (in this case, a 6BG6GT). The name is used, according to one old manual, because the oscillations are similar to those in a Barkhausen-Kurtz ultra-high frequency oscillator. One characteristic of this interference is that it's more noticeable with weak stations than strong ones. In reading up on the topic, I learned about other, similar types of interference, with amusing names such as "snivets" and "spooks."
>
> The simplest cure for Barkhausen interference is to substitute other output tubes until you find one that doesn't oscillate. (Another method is to place a small circular magnet around the tube and adjust it until the line disappears.) These are not expensive tubes, so I ordered a new one from Antique Electronic Supply. In the meantime, I happened to attend a swap meet and picked up a used 6BG6GT for a couple of bucks. The used tube didn't cure the problem, but the new one from AES eliminated it completely."

The production of snivets was also common in TV sweep tubes, and a temporary fix by one manufacturer gave many hams no end of grief when they tried to use the "fixed" tubes in their transmitters.

I think it was Sylvania with one batch of 6JB6A tubes as used in Drake gear. To eliminate the problem, they moved the cathode lead from the bottom of the tube to the top, giving lots of cathode inductance. Now at 15 kHz in TV's, this inductance gave no problem and it neatly stopped the high frequency oscillation. But in a ham transmitter, these tubes would work on 80 meters with the power dropping off quite a bit on 40. On higher frequencies, they didn't work at all. Neutralization was also virtually impossible, even on the lower bands. While rare, since only one production run was designed this way, these tubes still occasionally show up at hamfests as NOS - mainly from former TV repair shops. You can visually spot these tubes by noting the long cathode lead running outside the plate from the top of the tube to its base.

For Arden, I suggest using ferrite beads at the screen connection, or the use of a low-value wirewound resistor in series with the screen, to provide degeneration at higher frequencies - or to keep using the Sovteks!

73, Barry WA4VZQ ornitz@tricon.net

Message-Id: <5.2.1.1.1.20040308210137.024c18c8@wilma.widomaker.com>
Date: Mon, 08 Mar 2004 21:09:50 -0500
To: Old Tube Radios <boatanchors@theporch.com>
From: Chuck Swiger <cswiger@widomaker.com>
Subject: Re: FS: Johnson Invader 2000 RF deck
Cc: Old Tube Radios <boatanchors@theporch.com>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"; format=flowed

At 04:10 PM 3/8/2004 -0600, you wrote:

>I'll probably regret this but I have for sale a Johnson Invader 2000 RF Deck (less tubes and knobs). This would make an excellent platform for an 80-10 meter amplifier. Just add a pair of 4-400's (or 4-250's), a power supply and a cabinet and you're there. Pictures are available on request.

That would be an interesting project if someone wanted to upgrade their Invader 200 to a 2000 - From what I understand of the series you could remove the power supply from the 200, put that RF deck in it's place, using the 200 now as an exciter. Of course then you use a larger external power supply.

--Chuck
kb4new

Message-ID: <404D2850.2030000@execpc.com>
Date: Mon, 08 Mar 2004 20:13:36 -0600
From: Joe Eide <jeide@execpc.com>
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Any Radio related places in Moline, IL?
Content-Type: text/plain; charset=us-ascii; format=flowed
Content-Transfer-Encoding: 7bit

Any place to go that is boatanchor related in Moline, Illinois?

Thanks,

Joe - KB9R

Date: Tue, 09 Mar 2004 12:00:20 +1100
From: Morris Odell <morriso@vifm.org>
Subject: RE: Crystal tutorial
To: Old Tube Radios <boatanchors@theporch.com>
Message-id:
<07A064EA6042D4118A62009027F70E7733A253@nt_exchange.vifp.monash.edu.au>
MIME-version: 1.0
Content-type: text/plain; charset=us-ascii
Content-transfer-encoding: 7BIT

Hi A.B,

Take a look at:

http://hem.passagen.se/communication/txo.html

The last circuit on that page looks like what you describe. It's a series resonant overtone osc.

Good luck es 73,

Morris VK3DOC

> -----Original Message-----

> I have found a number of crystal vendors that will go up to
> 200 MHz (on
> overtones) but they need a spec that differentiates between a
> "series"
> crystal and one with a capacitive load.

Message-ID: <026101c40583$c3219870$6601a8c0@pavillion>
From: "Robert Nickels" <w9ran@oneradio.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Low Drive
Date: Mon, 8 Mar 2004 21:07:14 -0600
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Thanks Arden, Mike, and Brian for the good suggestions - I'll try a light capacitive coupling to my scope probe, after all a relative indication is all that's really needed. I'd been thinking about an active FET preamp, but a couple of pf is a lot easier and I suspect the half-life of a FET in my probing fingers would be measured in milliseconds!

In the meantime, substituting a different 6BA7 mixer tube "fixed" the Galaxy 300 low drive problem. I'm tring to figure out what is wrong with the original tube, as it tested within specs on my Hickock 600.

With the bad tube installed, the mixer screen voltage will drop from the normal 250V to under 80V! This would seem to indicate either a lack of plate voltage or an internal short, but I can't find one. What else could cause such a massive increase in screen current?

I did find an excellent tutorial on the care and feeding of the screen grid: http://www.webace.com.au/~electron/tubes/screens.htm Recommended reading, esp. for anyone designing for audio and modulator applications.

73, Bob W9RAN

Message-ID: <001a01c405a9$8b1fb760$50e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: <spr@earthlink.net>
Subject: Re: Anomalous vacuum tube behavior
Date: Mon, 8 Mar 2004 23:38:36 -0800
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi Barry;

You are the second to mention B-K oscillations, otherwise known as "snivets," and one of many who have suggested using screen grid resistors. I've already tried the screen resistors with no curative effect. One suggestion was to see if the "scriggles" (my name) occured at the transition point between A and AB operation. I will do that looking at plate currents with a current probe. The other suggestion was to use a de-gaussing coil to change the magnentic environment to possibly eliminate the oscillations. Your suggestion to add a magnetic field will also be tried.

Ferrite beads are definitely out of the question in an audio power amplifier because of their non-linear impedance. Been there before and it causes increased distortion as beads add kinks to the audio signal.

I will be getting back with the results of these tests. Thanks.

Arden Allen
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735 Sixth St.
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Message-ID: <001001c405b2$35ed2cb0$50e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Anomalous vacuum tube behavior
Date: Tue, 9 Mar 2004 00:40:38 -0800
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Having read Bob Nickels link, <http://www.webace.com.au/~electron/tubes/screens.htm>, I came across the term "dynatron oscillaitons," a phenomenom ascribed to a *negative resistance* characteristic formed by the relationship between an accelerating (screen) grid and subsequent electrode (plate) of lower voltage. The same kind of condition that possibly exists in ultlra-linear connected audio power amplifiers where the screen grids are connected to taps on the output transformer primary thus operating the screens at slightly higher voltage than the plates. This is exciting stuff, folks....

Arden Allen
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Message-ID: <001001c405b3$52449e10$50e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Anomalous vacuum tube behavior
Date: Tue, 9 Mar 2004 00:48:36 -0800
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 8bit

dy∑na∑tron

dy∑na∑tron (dÏπne-trÚn¥) noun

Electronics.

A tetrode with grid and plate potentials so arranged that plate current
decreases when plate potential increases.

(The American Heritage Dictionary of the English Language, Third Edition)

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Message-ID: <002401c405b3$bd156f80$50e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: The Dynatron
Date: Tue, 9 Mar 2004 00:51:36 -0800
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

http://www.ieee.org/organizations/history_center/legacies/hull.html

Arden Allen
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Message-ID: <404DC026.5070900@ix.netcom.com>
Date: Tue, 09 Mar 2004 07:01:26 -0600
From: David Stinson <arc5@ix.netcom.com>
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
CC: Old Tube Radios <boatanchors@theporch.com>, spr@earthlink.net
Subject: Re: Anomalous vacuum tube behavior
Content-Type: text/plain; charset=us-ascii; format=flowed
Content-Transfer-Encoding: 7bit

Arden Allen wrote:

> Ferrite beads are definitely out of the question in an audio power amplifier
> because of their non-linear impedance. Been there before and it causes
> increased distortion as beads add kinks to the audio signal...

This is most surprising. I'd think the impedance bump of a
ferrite bead at audio frequencies would be almost nothing at all.

End of BOATANCHORS Digest 3620
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